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Author

Krum, Julia Megan

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METHODS OF MAKING

By

Julia Megan Krum

A capstone project submitted for
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APPROVED

Professor Yunhee Min
Department of Art

Dr. Richard Cardullo, Howard H Hays Jr. Chair and Faculty Director, University Honors
Interim Vice Provost, Undergraduate Education

Abstract

A method is simply a procedure for approaching a goal in a systematic fashion. There is a widely-held misconception that the methods of art making and scientific research are entirely different entities; in reality scientific or analytical processes can be applied to producing art and vice versa. Both practices can involve research, a methodology that is by nature interdisciplinary and reliant on the creativity and dedication of the practitioner. In order to further explore the relationships between art, knowledge, the process of learning, and the process of creation, I adopted a systematic method to create unique art pieces. I created a series of paper-based pieces beginning with research, engaging in experimentation, and ending with communicating my findings to the community. Utilizing an understanding and practical application of research on creativity, this project demonstrates that the core techniques of art and science are synergistic in many ways.

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Introduction

There is a widely-held misconception that the methods of art making and scientific research are entirely different entities. It is easy to define activities as scientific or creative without much thought or to believe in a schism laying between two great cultures of art and science (Andreasen 49). As a neuroscience major frequently engaged in the process of making art, my own practice has always involved research, planning, and meticulous formulation before finishing a piece. I was naturally curious about the intersection between art and science. What methods were common between art and science? What are the relationships between research, art making, and science? What are the relationships between art, knowledge, and creativity?

In order to explore the numerous questions I had, I sought to perform a review of the literature circulating about art, science, methodologies, and creativity. The next portion of my project was to create art that was inspired or derived from the research. I sought to produce works where “the media for artists can be substituted with data for researchers” and ultimately meditative on the nature of creativity (Daichendt 11). The final art pieces were consolidated into three sets of pieces, Experimental, CYMK, and a final large canvas piece.

Theoretical Paradigms

In order to determine how research can impact art-making, a discussion of creativity is warranted. Of the literature centered around art making, creativity, and research, I often found references to key paradigms on how the creative act is organized. Many of these systems focus on presenting a four-staged system such in Graham Wallas’ four stages of creativity. Some reviews of cognitive neuroscience were also sampled.

In 1926, Graham Wallas described four stages of creativity in *The Art of Thought*: preparation, incubation, illumination, and verification. Wallas based much of his work on the thoughts of German physicist Hermann von Helmholtz, who elaborated on creativity as a function of a specific type of “artistic intuition” (Nicholls 99). Preparation involves the systematic and conscious analysis of a problem (Wallas 81). The next stage, incubation, involves the unconscious mind and free-working associations that may be made unbeknownst to the mind (Wallas 86). The least controllable stage is illumination, where the new thought or eureka moment is reached and a new thought or idea is made apparent (Wallas 96). Finally, the new thought is tested in reality or coalesced into a final organized idea (Wallas 81). In creating a numbered or staged process of creativity, this draws parallels to the scientific method.

Beyond Wallas’ model, other scholars have proposed stages of creativity. Carole Gray and Julian Malins suggest generation, selection, synthesis, articulation, and presentation (Procedures 7). Min Basadur and Garry Gelade also use the template to propose a different creative model. They suggest generalizing, conceptualizing, optimizing, implementing; all of their stages are active verbs and oriented towards a more practical setting such as the workplace (Basadur 15). Clearly their work has implications for business and the general workplace, from the auto industry to company startups.

Basadur et al. also mention another common motif of creativity and methodologies. Their four stages of the creative process are actively cycling and the researchers insist that it is a circular process (26). Graham Collier also suggested creativity as a more circular process but instead directed inwards. Other individuals borrow language from science and discuss creativity as a method for replication and a

way of practicing to produce more art. Shaun McNiff, an artist by trade, recommended a systematic, clear method which could be reproduced by other practitioners for further elaboration or experimentation (33).

In Collier's view, the artist is working to evaluate and trying "to comprehend the structural characteristics of the model" where the model is the world around him (9). Where the artist's consciousness directs a dialogue of senses, intellectual knowledge, feelings, and intuitive thoughts that generate the creative breakthrough before action is taken in the external world (Collier 27). McNiff, who works with painting, teaching, and art therapy, also encourages the use of "systematic experimentation with the goal of gaining knowledge about life" (34).

Various attempts have been made to describe and quantify creativity in neuroscience. Once a definition of creativity is chosen for a study, experiments are often structured to examine the spontaneous generation of creativity and the mechanistic circuits or structures necessary for creative thinking (McPherson 82). In cognitive neuroscience, researchers have tried various imaging methods and tests to evaluate the brain structures and processes associated with creativity. EEG scans, PET scans, and fMRIs all help reveal how the neocortex of healthy individuals or case studies of brain-damaged professionals changes during thought (Sawyer 138, Zaidel 389). Statistically averaged changes in neuronal activity are of particular interest to researchers who are attempting to locate the differences between training, improvisation, and insights (Sawyer 142).

Other tools in combination with EEG, PET, and fMRI scans have been also used to gauge which areas of the brain are most involved in creativity. Variations of remote

word association (RAT) tests, anagrams, fantasy story generation, riddles, alternative uses tests, and other verbal activities have been used (Sawyer 142, Fink 70). Other studies utilize improvised music, particularly jazz music, and discovered that areas like the dorsal lateral prefrontal cortex, fusiform gyrus, and anterior cingulate cortex were more involved during the performance (Sawyer 147). Mind wandering, a process believed to precede the generation of a creative insight, has also been of particular interest in relation to the incubation of creative thoughts and measures of creativity in individuals (Sawyer 145).

Methods

I first began the process by recording information in a notebook, a method recommended by Carole Gray and Julian Malins in their article about research methods for artists. I mainly recorded the notes I took from various papers or books based on: creativity, cognitive neuroscience related to creativity, methodologies that artists use, methodologies scientists use, scientific methods used to analyze creativity. Much of the work was later used to formulate the literature review and some documents were printed and saved them for later stages of the project.

I also spent a short amount of time collecting samples of materials I thought were tangential to my project or readings. I included things such as a test strip from printer ink, homework, scientific notes from certain lectures, diagrams from research papers, and proposals I submitted for this project. On some of the pages, I made notes on my thoughts about those materials or items, often about the materials' most interesting characteristics. The records in the notebook serve as a more literal representation of the preparation stage

as mentioned in Wallas' model of creativity but art-making in the later stages of the project also contain elements of preparation.

In terms of materials used, the literature and research inspired selections of the materials used in the project. The paint used in the project include common acrylic gesso, a type of acrylic paint, and C8338WN Tri-Color Inkjet replacement ink cartridges. The inkjet cartridges were cracked open and the colored ink inside mixed into a diluted water-based ink. The resulting paint is a very thin liquid in standard inkjet colors (magenta, cyan, yellow, and black). The colors can be mixed with other in order to produce a wider range of colors or shades of pigments.

The first series, Experimental, was a set of four of pieces were made as a reaction to reading Graham Wallas' *The Art of Thought* and James Daichendt's *Artist Scholar: Reflections* on writing and research. My goal was to translate the stages mentioned into specific ink images. Each 24 by 18-inch piece was constructed as a further elaboration of the basic practice built upon knowledge gained on successive research on the material. Gesso was applied to the surface repeatedly to form a thicker painting surface. Painted surfaces were then subjected to a pressed material like plastic bubble wrap or other papers for a fixed amount of time. The pressed material was then peeled back from the surface to reveal the gesso holding the desired texture.

For the CMYK series, gesso was applied to the paper surface and then plastic and bubble wrap, or other gesso papers were applied and removed to leave some texture imparted into the surface. *Yellow* (2017) and *Magenta* (2017) are mirror images of each other as they were painted and textured together. I chose one primary color since the first

series already dealt with a more literal interpretation of Wallas' stages of creativity. The final piece, *Key* (2017), was made as a standalone white piece without ink.

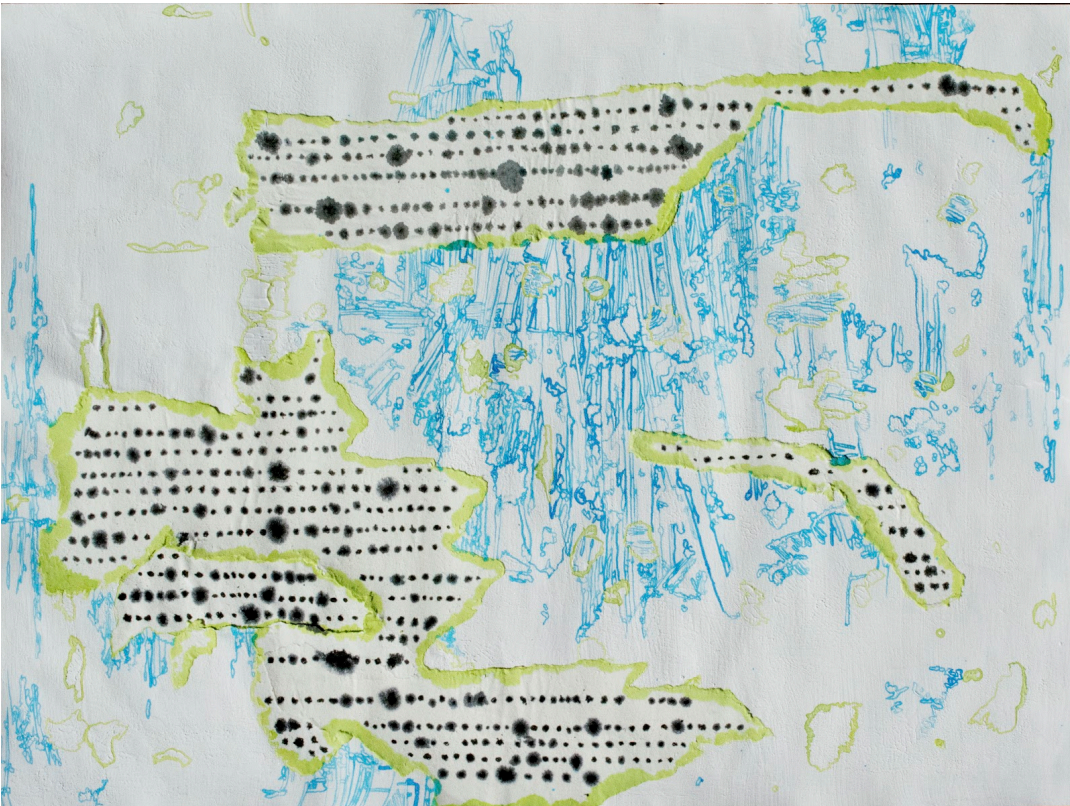
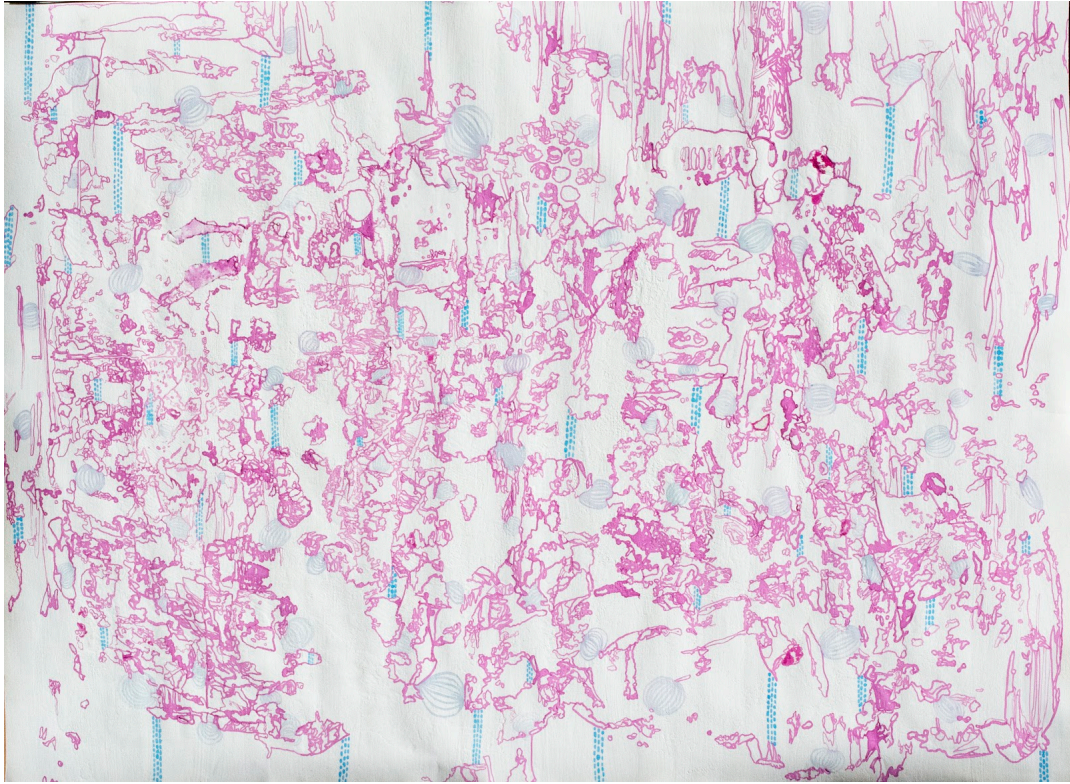
The final item is large 5 ft. x 4 ft. canvas served as a piece to represent all of the knowledge I had gained over the course of the project. I purchased a standard 5 ft. x 4 ft. canvas painter's drop cloth, covered it in gesso, and made a very simple wood frame. I kept layering gesso on the canvas and worked on it while it was horizontal and also vertical unlike the earlier paper pieces that were exclusively made while laying them on a horizontal plane. The gesso soaked into the canvas and approximately 10 to 15 layers were painted due to the very absorbent nature of the canvas. Using the various papers I collected earlier in the research and reading portion of my project, I pasted them onto the wet gesso. After a 15-minute interval, the papers were removed; in some cases the papers stuck onto the canvas. Final marks in blue and magenta ink were made.

Results

Experimental Series: March 2016 – March 2017



Diagram (2016)

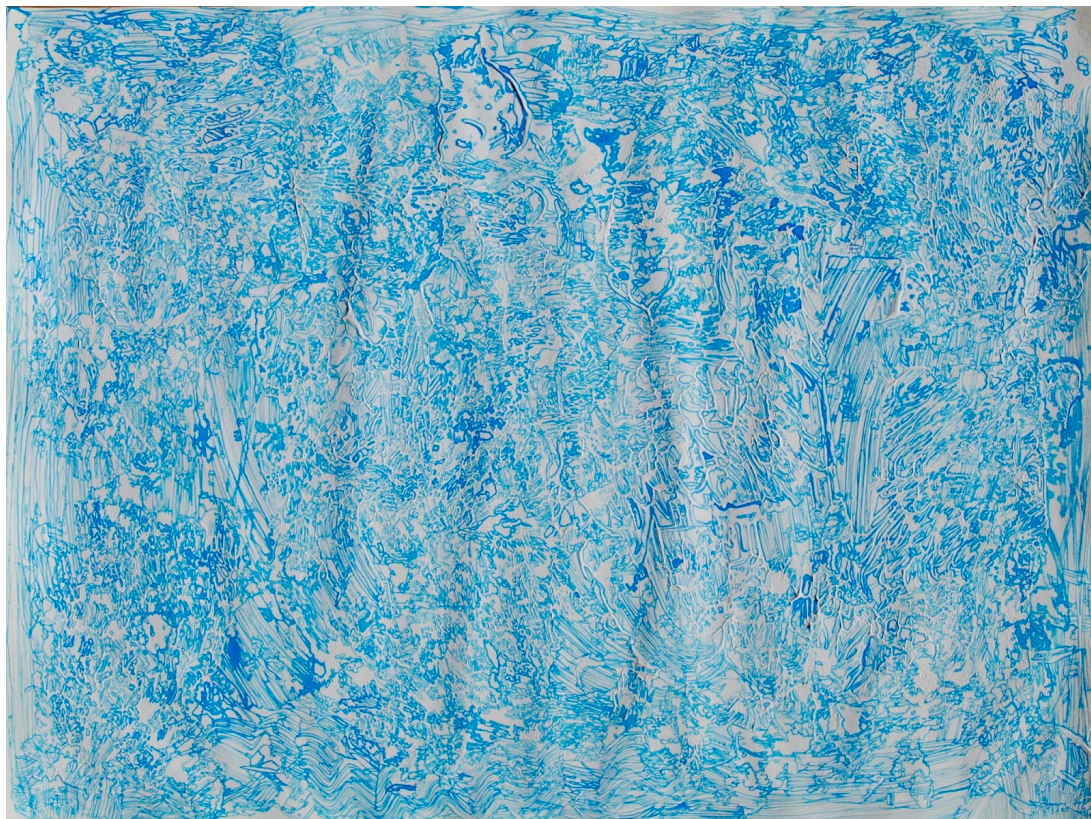


Top: *Allotropy* (2016) Bottom: *Resonance* (2016)

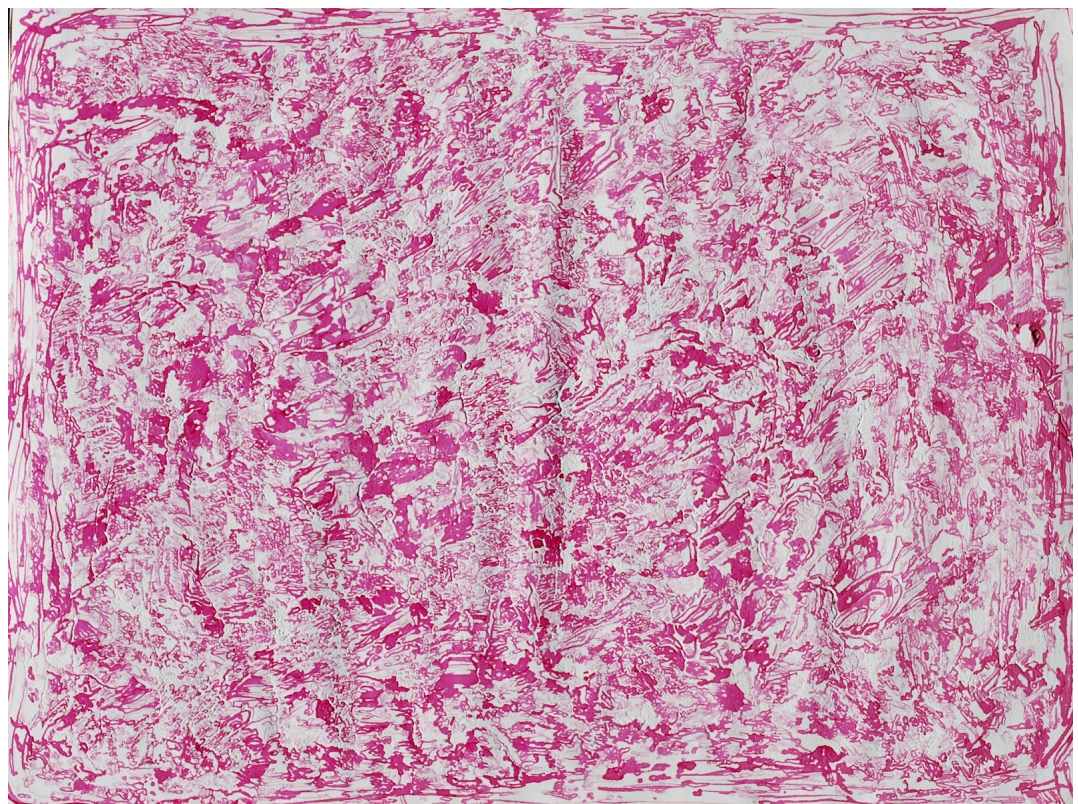


Split (2017)

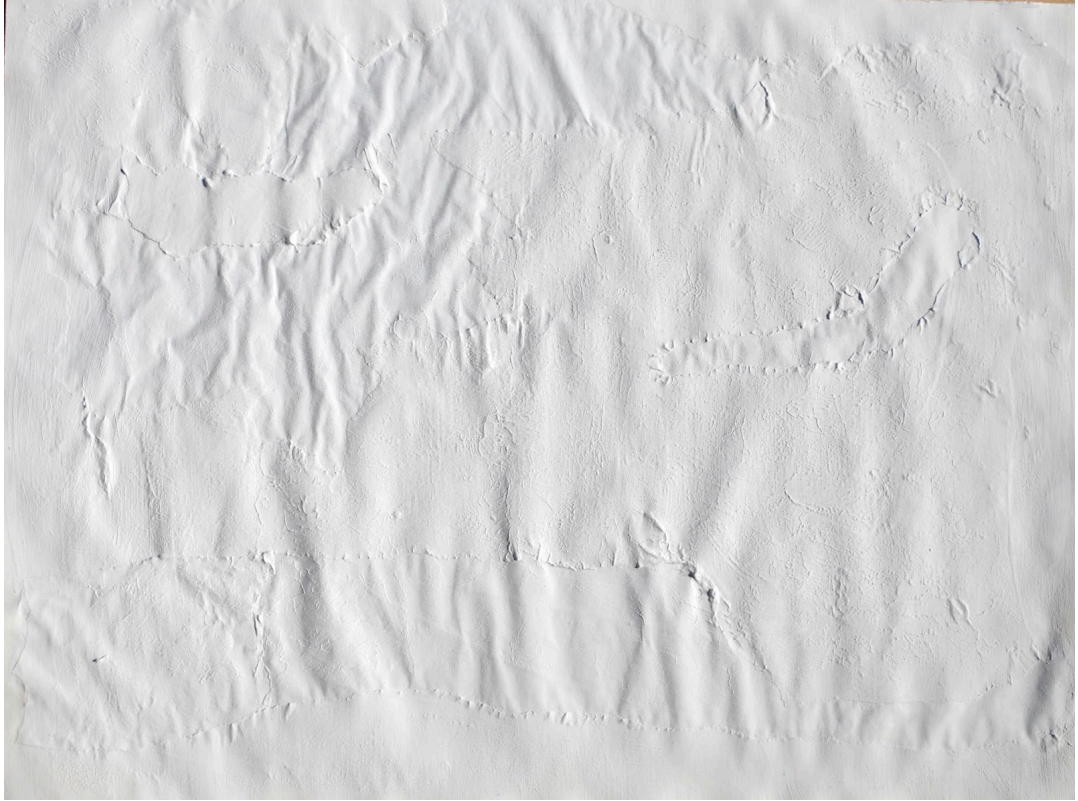
CYMK Series: December 2016 – April 2017



Cyan (2017)

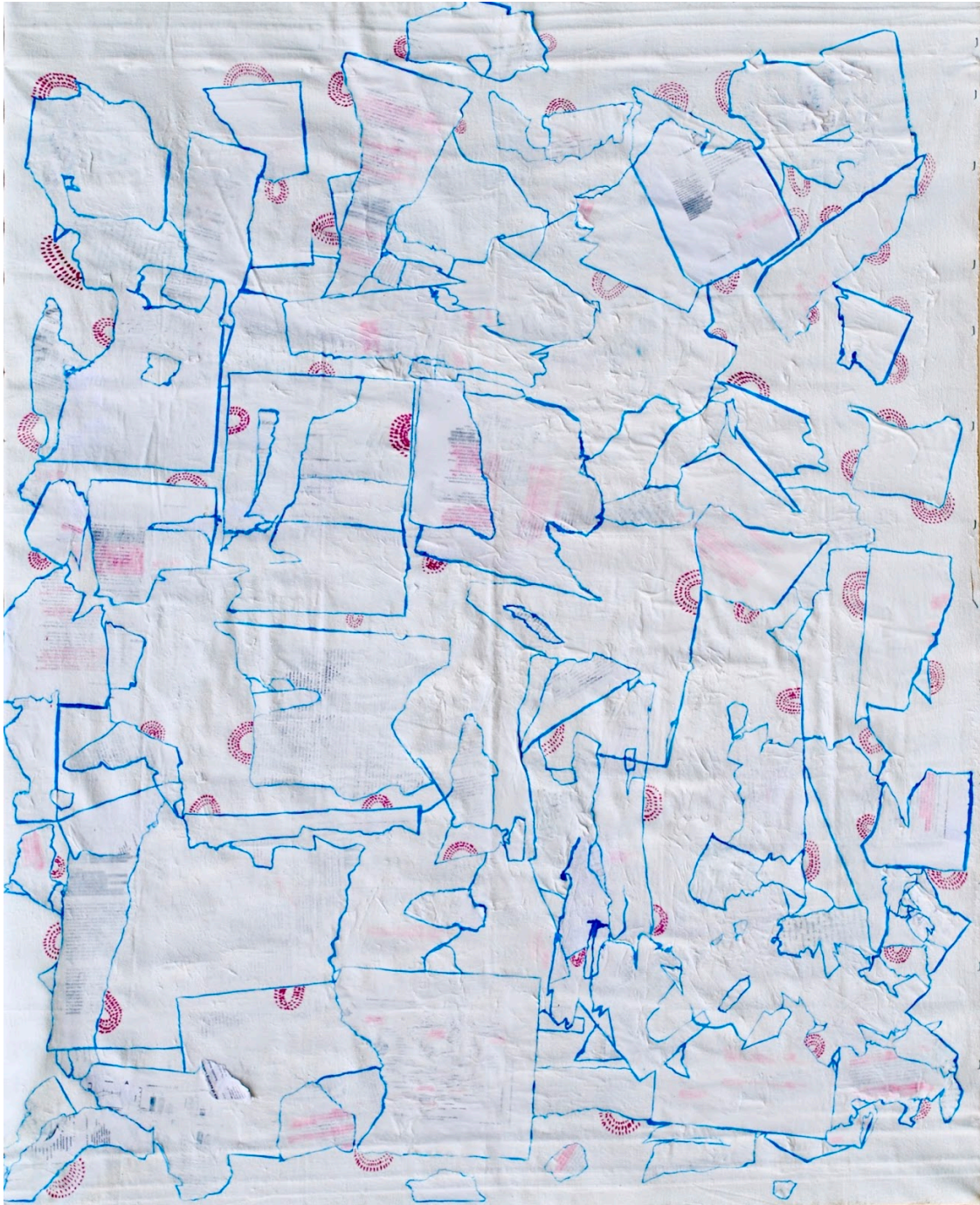


Top: *Yellow* (2016); Bottom: *Magenta* (2017)



Key (2017)

Large Canvas:



Untitled (2017)

Discussion and Conclusions

Picasso stated that he could “hardly understand the importance given to the word research in connection with modern painting” (Picasso 1923). However, there are clearly a variety of methods for approaching art and researching for an art project. Ultimately, the more philosophical discussions afforded by Wallas, Daichendt, and Carole Gray et al. provided more background for the pieces of work made. Reviews of cognitive neuroscience literature were less fruitful; no single study pointed in a single direction indicating the difference between artists and scientists or where creativity originates from. Since creativity is such a broad field with no definite results from highly structured experiments, it was difficult to draw meaningful conclusions that would add to making this art series.

Additionally, having engaged in the project and research material, the importance of diction and word choice has become more obvious. Language is critical. Carole Gray and Julian Malins examined research terminology and attempted to define pathways for artists to use; they frequently borrowed common terms from social science (Gray, Procedures 3). Daichendt attempted to circumnavigate this issue by defining the existence of “artist scholars” engaged in the “systematic use of the artistic process” in universities which are already institutions associated with the accumulation of new knowledge (Daichendt 51). However, both approaches to language have their own positives and negatives. Gray and Malins admit to the difficulty in selecting established terminology or constructing new words which “may [remain] so project specific to be of little, if any, use when applied to other situations” (Gray, Procedures 3).

Engaging in a long-term project and starting with a foundation in literature review and research has afforded this project to have a more structured process. I think there is a lot of value in designing a project that goes through the stages of preparation, incubation, illumination, and verification. By having a clear goal, is easier to start and end a project while still generating ideas for future bodies of work.

Finally, like Gray and Malins, I conclude that a process of art making based on research is an iterative process (Visualizing 16). The nature of this project has created new questions, particularly about how the work will be received and how language plays a role in art and science. Is the methodology of the work transparent or obscured? How will the audience interact with the research behind the pieces, if at all? Clearly, making the works has not fully elucidated the nature of the relationship between art, science, research, or creativity but ultimately opened up new avenues for future bodies of work.

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